

B - Fossils B - Pearl City Invitational - 12-12-2020

Feel free to message me with any questions or concerns you have while taking the test. Have fun and good luck!

Station 1

1. (1.00 pts)



Identify Specimen A.

Chelicerata

2. (1.00 pts) In which time period did Specimen A first appear?

Cambrian

3. (1.00 pts) What is the name of the touch and vibration sensors on the cuticles of Specimen A?

setae

4. (0.00 pts) Just kidding, completely skip question 4, it was accidentally added as an extra question and no points will be awarded for answering it.

book lungs

legs

5. (2.00 pts) Modern terrestrial individuals of Specimen A use what organ for intake of oxygen and removal of waste gases? What is this organ evolved from?

book lungs

legs

6. (2.00 pts) What is the main feeding organ that evolved immensely from the evolution of basal organisms to those present today?

pedipalps

7. (2.00 pts) What is the name of Specimen A's foremost tagmata? What about the rearmost?

prosoma

opisthosoma

8. (1.00 pts) Which lagerstätten from the rules has fossils of Specimen A?

Burgess Shale

9. (1.00 pts) What is the mineral composition of Specimen A's exoskeleton?

chitin

10. (1.00 pts) T/F: The taxon of Specimen A includes the first animal to ever set foot on land.

True False

Station 2

11. (1.00 pts)



Identify Specimen B.

crinoidea

12. (1.00 pts) What part of Specimen B is shown in the image?

calyx

13. (2.00 pts) What are stalked individuals of Specimen B called? What about unstalked individuals?

14. (1.00 pts) What is the name of the appendages that act as holdfasts for Specimen B?

15. (3.00 pts) *Is Specimen B capable of locomotion? If so, how fast can it move? If not, how can it escape from predators?

Expected Answer: Yes, 0.11 mph

16. (2.00 pts) In which era (first blank) and period (second blank) did Specimen B have its highest abundance and diversity?

17. (1.00 pts) What type of symmetry does Specimen B have?

18. (1.00 pts) What body part of Specimen B is most frequently used to differentiate species?

19. (2.00 pts) In which two time periods did Specimen B undergo extreme adaptive radiation?

Answer formatting: alphabetical order, one per blank

20. (1.00 pts) Which state has Specimen B as its state fossil?

Station 3

21. (1.00 pts) For this entire station, identify the time period corresponding with each image.



Neogene

22. (1.00 pts)



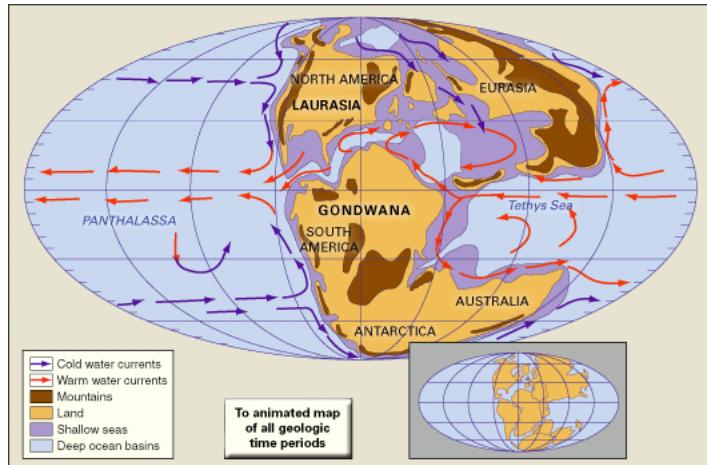
Silurian

23. (1.00 pts)



Ordovician

24. (1.00 pts)

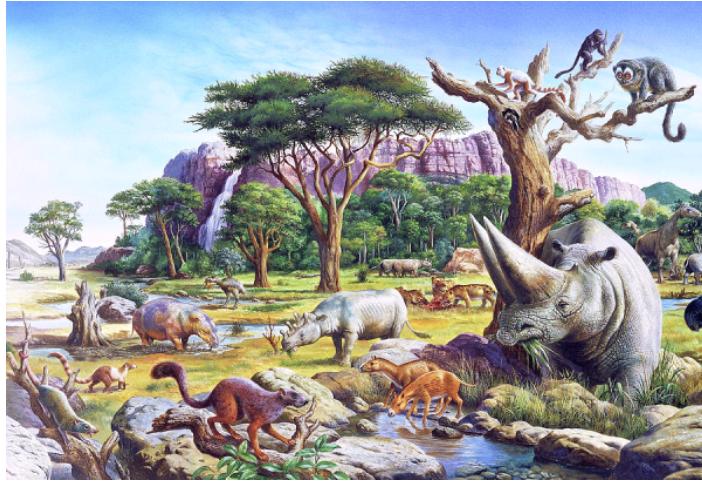


25. (1.00 pts)



Permian

26. (1.00 pts)



Paleogene

27. (1.00 pts)



Devonian

28. (1.00 pts)

Carboniferous

29. (1.00 pts)

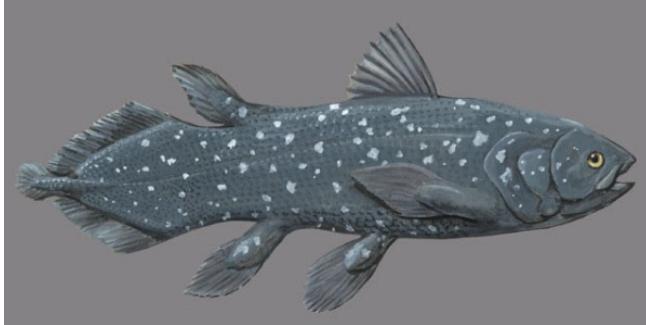
Triassic

30. (1.00 pts)

 Cambrian

Station 4

31. (1.00 pts)



Identify Specimen C.

 Latimeria

32. (1.00 pts) What is the name of Specimen C's class?

 flesh fin

33. (2.00 pts) What makes up the layer outside of vascular bone in scales of Specimen C? What about the layer outside of that?

 cosmine keratin

34. (1.00 pts) What covers the teeth of Specimen C?

 enamel

35. (1.00 pts) Did Specimen C ever evolve into a tetrapod?

 No

36. (1.00 pts) What describes how females store young?

- A) Viviparous
- B) Oviparous
- C) Ovoviviparous

37. (1.00 pts) What is the name of ear bones of Specimen C?

otolith

38. (1.00 pts) What word ending in -vore describes Specimen C's diet?

piscivore

39. (1.00 pts) What are the young of Specimen C called?

pups

40. (1.00 pts) What gland do they use to locate prey?

rostral

Station 5

41. (1.00 pts)



Identify Specimen D.

favosites

42. (1.00 pts) What is a nickname for Specimen D?

43. (1.00 pts) In which direction does Specimen D grow?

44. (1.00 pts) What are the holes in the skeleton wall called? What do they connect?

45. (1.00 pts) What is the mineral composition of Specimen D?

46. (2.00 pts) Extinctions at the end of which two time periods had the largest impact on Specimen D's diversity?

47. (2.00 pts) What organism did Specimen D have a symbiotic relationship with? What process could these organisms perform that Specimen D could not?

48. (1.00 pts) What environment did Specimen D live in?

49. (1.00 pts) Who was Specimen D named by? (just the last name)

50. (1.00 pts) What is the meaning of Specimen D's phylum name?

Station 6

For this station, identify the plant from its name meaning and then answer one question about it. Each question corresponds to the plant directly above it.

51. (1.00 pts) This genus was first discovered by Shigeru Miki, as it is native to the Hubei region in China. It is unique in being a deciduous conifer.

Metasequoia

52. (1.00 pts) How tall can this plant grow?

Answer formatting: number and unit of "ft"

165 ft

53. (1.00 pts)

This genus bears cones and produces secondary xylem towards the center of the stem. The stems are hollow or air-filled and fill with sediment when broken, leading to the numerous pith casts of the inside of stems.

calamites

54. (2.00 pts) What are two ways this plant reproduced?

spores

rhizomes

55. (1.00 pts)

This genus has around 160 species and can be shrubs or trees. The military once designed technology from the structure of this plant's seed, which are released in pairs but require stratification before sprouting.

Acer

56. (1.00 pts) What food item is derived from the xylem liquid of this plant?

maple syrup

57. (1.00 pts)

The name of this genus was originally used only to describe the stems but is now used to describe the entire plant. The plant consists of the root mantle, the stem, the fronds, the coifers, and the leaves. Leaf scars are present on the stem in elliptical shapes; the arrangement of these scars is often used to differentiate species of this genus.

psaronius

58. (1.00 pts) What makes up the trunk of this plant?

rootlets

59. (1.00 pts)

This genus has a nickname of cottonwood and it was the first tree to have its full DNA sequenced. The flowers of this plant are dioecious and appear in early spring on a catkin.

populus

60. (1.00 pts) What is the name of the porous tissue present in the bark of young plants for gas exchange?

lenticel

61. (1.00 pts)

This genus was a part of coal forest flora. The majority of the stems consist of cortical meristem rather than wood and the needle-like leaves are spiraled around young shoots. The reptilian look of the diamond-shaped leaf scar pattern resulted in it being mistakenly exhibited as fossil lizards or snakes.

lepidodendron

62. (1.00 pts) What is the phylum of this plant?

Lycopodiophyta

Station 7

63. (1.00 pts)



Identify Specimen E.

Dactylioceras

64. (2.00 pts) What is the meaning of the first part of Specimen E's name? What does it refer to?

finger

branching ribs

65. (1.00 pts) Mass mortality deposits of Specimen E are quite common. What occurred shortly before the death of these organisms that led to their burial in large amounts?

spawning

66. (1.00 pts) What time period is Specimen E an index fossil for?

67. (1.00 pts) In which time period did Specimen E go extinct?

68. (3.00 pts) What are gas chambers in Specimen E called? What separates these gas chambers in? Are these convex or concave?

69. (2.00 pts) What thin structure does Specimen E use to control its buoyancy? What is the name of the portion of the shell that this structure connects?

70. (1.00 pts) What shell form does Specimen E have?

71. (1.00 pts) Which lagerstatten can the order of Specimen E be found in?

Station 8

72. (2.00 pts) The rivalry between which two paleontologists sparked the Bone Wars? Please answer with their full names including the middle name.

73. (1.00 pts) How many new species of dinosaurs were discovered as a result of the Bone wars?

74. (3.00 pts) Which of the following taxons were discovered in the Bone Wars?

(Mark **ALL** correct answers)

- A) Triceratops
- B) Coelophysis
- C) Allosaurus
- D) Diplodocus
- E) Ichthyornis

F) Stegosaurus**75. (2.00 pts)**

The Bone Wars and expansion of railroads westward led to the discovery of the Western Interior Seaway covering the Midwest US. What is the name of the landmass to the west of this Seaway? What about the east?

76. (2.00 pts) What two processes destroy most fossils before they can be discovered?**77. (1.00 pts)**

Precipitation of an inorganic compound in an organic matrix is known as _____; this greatly increases the chance that this part of an organism will become fossilized.

78. (1.00 pts)

Using the fossils in a rock layer to determine relative ages of rock strata is known as _____; this is a widely used technique to match up horizons between geological sections.

Matching: Type the letter of the correct nickname below its time period/era.

- A. Age of Reptiles
- B. Age of Mammals
- C. Age of Fishes
- D. Age of Amphibians
- E. Age of Invertebrates

79. (1.00 pts) Cambrian and Ordovician**80. (1.00 pts)** Devonian**81. (1.00 pts)** Cenozoic**82. (1.00 pts)** Mesozoic

83. (1.00 pts) Carboniferous

Station 9

84. (1.00 pts)



Identify Specimen F.

Juresania

85. (1.00 pts) *What is the purpose of the spines on the outside of the shell?

Expected Answer: keep the organism in place on the seafloor

86. (1.00 pts) What is Specimen F's mode of life in terms of where it lived?

87. (1.00 pts) What is Specimen F's mode of life in terms of diet?

88. (3.00 pts) Which of the following continents can Specimen F be found on?

(Mark **ALL** correct answers)

- A) Europe
- B) South America
- C) North America
- D) Australia
- E) Asia
- F) Africa

89. (1.00 pts) What class is Specimen F in?

Articulata

90. (1.00 pts) Is the pedicle valve of Specimen concave or convex?

convex

Station 10

For this station, identify the dinosaur from its name meaning then answer one question about it. Each question corresponds to the dinosaur directly above it.

91. (1.00 pts) Arm Lizard

Brachiosaurus

92. (1.00 pts) What time period was this dinosaur extant in?

Jurassic

93. (1.00 pts) Good Mother Lizard

Maiasaura

94. (1.00 pts) What was used by this dinosaur to incubate eggs?

rotting vegetation

95. (1.00 pts) Spine Lizard

Spinosaurus

96. (1.00 pts) One of the specimens for this dinosaur is from Morocco; where is the other one from?

Egypt

97. (1.00 pts) Hollow form

Coelophysis

98. (1.00 pts) This dinosaur is found in large amounts in which lagerstatten?

Ghost Ranch

99. (1.00 pts) Fused Lizard

Ankylosaurus

100. (1.00 pts) T/F: This dinosaur genus is monotypic.

True False

101. (1.00 pts) Near Crested Lizard

Parasaurolophus

102. (1.00 pts) What is the infraorder of this dinosaur?

Ornithopoda

103. (1.00 pts) Double beam

Diplodocus

104. (1.00 pts) What is the name of this dinosaur's stance when it is bipedal with the tail as a prop for support?

tripodal

Station 11

105. (3.00 pts)



Identify Specimen A, B, and C.

H. neanderthalensis

Australopithecus

H. erectus

106. (2.00 pts)

*An individual of Specimen A's taxon was discovered with most of his teeth lost. His skeleton also showed evidence of major injuries including a healed broken hip and widespread arthritis, but he survived with these disabilities for quite some time. What does this reveal about populations of Specimen A as a whole?

Expected Answer: They cared for their sick and elderly

107. (1.00 pts) T/F: Specimen A is our direct ancestor.

True False

108. (1.00 pts) What is the name of the gap behind the wisdom teeth in Specimen A?

retromolar space

109. (2.00 pts) *A knee joint of Specimen B was found where fitting the thigh and calf bone together resulted in a straight angle. What does this reveal about Specimen B?

Expected Answer: They were upright walking hominids

110. (1.00 pts) What is the name of the almost complete skeleton of Specimen B discovered in the Sterkfontein caves of Gauteng?

Little Foot

111. (1.00 pts) What percentage of a H. sapiens brain was the size of Specimen B's brain?

35%

*In one fossil of Specimen C, the spine was comparable to *H. sapiens* and the vertebrae had a large cross-sectional area to support a large compressive load. What does this reveal about Specimen C?

Expected Answer: Capable of running and long-range biped walking

113. (1.00 pts) Given that *H. erectus* has an unusually high frequency of pits in the molars and premolars, what adjective describes the food it ate?

brittle

114. (1.00 pts) Specimen C is known as the first early hominid to use/invent what crucial thing?

fire

Station 12

115. (1.00 pts)



Identify Specimen G.

Diploceraspis

116. (1.00 pts) What bone formed the outer/front edge of each horn?

squamosal bone

117. (1.00 pts) When the horns and skull act as a hydrofoil, what do the horns generate?

lift

118. (1.00 pts) What is the meaning of Specimen G's scientific name?

double caul

119. (1.00 pts) What other animal from the list was found to eat Specimen G?

Dimetrodon

120. (1.00 pts) What word describes Specimen G's diet?

piscivore

121. (1.00 pts) Being an amphibian, Specimen G is theoretically adapted for both water and land. Which one is it better suited for?

water

122. (2.00 pts) Which two time periods did Specimen G mainly live in?

Carboniferous

Permian

123. (1.00 pts) T/F: The young of Specimen G were born with a boomerang shaped head.

True False

Thank you for taking this test! Please fill out this feedback form (<https://forms.gle/J795Uymioup4C8oKA>) in the next day and good luck at awards!